

Technology Corner



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Buttons vs Tape -- Target Plates for Post-Mounted Delineation:

In December 1995 UDOT's Maintenance Quality Panel, Larry Crane, Shed Foreman in one of UDOT's district maintenance offices brought up the subject of "Buttons vs Tape". The contention was made that prismatic buttons are faster to attach than reflective sheeting on roadside delineators. Also at that time, durability of buttons was claimed to be better than sheeting, especially in areas where wet and snowy conditions contribute to degradation of the sheeting backing. It was experienced by maintenance forces that before applying a new piece of sheeting great care must be taken to completely remove the old sheeting to insure proper bonding to the metal post. These facts were presented in a brief video presented by the Richfield district maintenance division.

Daytime delineation of the roadside generally can be accomplished effectively with pavement markings. Night visibility, however, often requires a different approach to provide long-range delineation of the roadway alignment. Another problem is providing visibility during periods of rain or snow when most pavement markings are obscured. Post-mounted delineators (PMDs) of various forms have gained widespread acceptance as a roadway delineation treatment. Components of a typical PMD consist of a retroreflective element, the support or mounting post, and possibly a backplate. The purpose of post delineation is to outline the edges of the roadway and to accent critical locations.

UDOT currently specifies a microscopic glass-bead reflective sheeting or an acrylic lens colored prismatic reflector. A technical questionnaire was prepared by the Research Division and distributed nationwide in an effort to research more about current delineation practices. Twenty-nine States responded to the survey. Results from that survey showed that most States prefer either "both sheeting and buttons" or "just reflective sheeting" as delineation options. Also, they prefer to "rivet" or "bolt" a piece of sheeting on substrate directly to the post. Many States find sheeting "of greater value" when compared to prismatic reflectors.

Based on this survey the UDOT Research Division proposed test sections on urban and rural



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interstate to evaluate if local environmental conditions would affect the concept of target plates for post-mounted delineation. Eight different methods were used in the test sections including various buttons, grades of reflective sheeting, and installation procedures. Research was conducted of the installation process to determine if a time savings could be attributed to one method over another. From field time studies the scrape-and-replace method was found to be just as fast as the riveting method of installation; hence, no value could be associated with that aspect of the method. A life-cycle cost comparison using culvert markers showed that the long-term performance of target plates have a predicted life of seven years as compared to one year of the just sheeting method or buttons. Recommendations of the research conducted include the following items:

- *Adopt a 4"x4" target plate and rivet with reflective sheeting for delineator markers.*
- *Provide target plate with reflective sheeting affixed and with hole drilled for a rivet.*
- *To help control material costs, solicit bids for either plastic or aluminum target plates.*
- *Use prismatic sheeting for greater specific intensity for point luminance.*
- *Use an industrial quality rivet gun for application and matching rivets for target plates.*
- *Discontinue the existing practice of using acrylic lens prismatic reflectors and the affixing of flexible sheeting directly to post.*

The November 1997 Maintenance Quality Panel and the Traffic Engineers' Panel have considered these research proposals. A standard drawing detailing the use of target plates has been prepared and will be incorporated into Utah's Standard Drawings by the Spring of 1998.

NOTE: A complete report can be obtained by contacting the UDOT Research Division @ (801) 965-4196: Refer to Report # UT-97.03 entitled, *"Buttons vs Tape: Field Performance Study and Research Findings of Alternative Delineators Markers"*. Questions regarding this topic may be directed to Mujeeb Basha, UDOT Development Engineer, at (801) 965-4323.

